

# ABSTRACT

To provide a duplexer in which not only an electric power resistance is superior but also an attenuation outside a pass band and an isolation characteristic can be set sufficiently large.

A duplexer 1 includes transmission-side and reception-side band filters 1A and 1B respectively constructed by connecting a plurality of surface acoustic wave resonators to form a ladder circuit, in which: each of the surface acoustic wave resonator includes a  $47^{\circ}$  to  $58^{\circ}$  rotated, Y-cut, X-propagating  $\text{LiNbO}_3$  substrate and an IDT electrode 12 formed on the  $\text{LiNbO}_3$  substrate; the IDT electrode includes a Ti foundation electrode layer 12a formed on the  $\text{LiNbO}_3$  substrate formed through epitaxial growth and an Al electrode layer 12b formed through epitaxial growth on the Ti foundation electrode layer; and a (111) face of the Al electrode layer, a (001) face or (100) face of the Ti foundation electrode layer, and a (001) face of the  $\text{LiNbO}_3$  substrate are aligned parallel.